

CLAIMS

1. A device for stirring a liquid (L) in a reactor and for injecting a gas into a liquid, comprising:

5 - a drive device (1) arranged above the container, provided

 - with a vertical output shaft (2) equipped at its lower end with at least one axial-flow moving assembly (4) submerged in the liquid, and

10 - with a self-priming impeller (5) submerged in the reactor and being able to be driven by the output shaft (2),

the output shaft being enveloped coaxially by a cylinder (6) whose lower end (6a) opens into the impeller and whose upper end (6b) is connected in a sealed manner to the drive device (1) and is perforated with an opening (14) for injecting a gas into an annular gap (15) delimited by the shaft and the cylinder,

20 the impeller being composed of two superposed disks (8, 9) and of a set of radial vanes (11) arranged between the disks and fixed thereto, the upper disk (8) being perforated with a central hole (12) into which enters the lower end (6a) of the cylinder (6) which delimits, together with the edge of said hole, an at least partially annular space (13) through which liquid is sucked into the impeller,

30 - means for directing toward the axial-flow moving assembly (4) the gas/liquid dispersion expelled radially by the impeller (5),

characterized in that the surface area of the lower disk (9) of the self-priming impeller (5) is less than the surface area of the upper disk (8) of said impeller.

2. The device as claimed in claim 1, characterized in that the lower disk (9) of the self-priming impeller

(5) has a diameter which is less than the diameter of the upper disk (8).

3. The device as claimed in claim 2, characterized in
5 that the diameter of the lower disk (9) is at least greater than or equal to the diameter of the at least partially annular space (13).

3. The device as claimed in one of claims 1 to 3,
10 characterized in that the lower disk (8) is at least partially cut out.

4. The device as claimed in claim 3, characterized in
15 that the lower disk (8) is at least partially cut out in the form of an annulus.

5. The device as claimed in one of the preceding claims, characterized in that the axial-flow moving assembly (4) is a propeller.

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6. The device as claimed in one of the preceding claims, characterized in that the means for directing toward the axial-flow moving assembly (4) the gas/liquid dispersion expelled radially by the impeller
25 (5) comprise a baffle-forming annular casing (16) enveloping the impeller (5) and profiled so as to direct toward the axial-flow moving assembly (4) a stream issuing radially from the impeller, said annular casing being perforated with two superposed central
30 openings (17, 18) coaxial with the shaft (2).

7. The device as claimed in one of the preceding claims, characterized in that no additional moving stirring assembly is placed on the output shaft below
35 the axial-flow moving assembly (4).